

Supplemental Material S2. Supplementary analyses.

Growth Curve Modeling

Because window analyses obscure fine-grained temporal dynamics of children's language processing, we also utilized growth curve modeling to capture any potentially fine-grained differences in the time course of children's language processing (Barr, 2008; Mirman et al., 2008). We utilized logistic multilevel modeling, which analyzes a vector of successes (looks to the target) and failures (looks to the distractor) in each time bin (Donnelly & Verkuilen, 2017; Mirman et al., 2008). Our pre-registered analysis plan stated that linear and quadratic orthogonal polynomials would be used to model the data, but visual inspection of growth curves suggested more than one inflection point. For this reason, orthogonal polynomials for linear, quadratic, and cubic time, as well as their interactions with talker type and condition, were entered into the models, as well as random intercepts and slopes for linear, quadratic, and cubic time nested in participants and participants by condition. Data were collapsed into 50 ms bins to reduce autocorrelation in the data.

Reaction Time Analyses

In addition to children's accuracy in the window and growth curve analyses, children's speed of lexical processing (or reaction time) was also analyzed. Consistent with previous studies using the LWL paradigm, the latency to shift from the distractor to the target image was analyzed on trials in which children were looking at the distractor image at word onset (distractor-initial trials; Fernald & Marchman, 2012; Fernald et al., 2008). We additionally looked at children's latency to shift away from the target image on target-initial trials, because differences in latency to shift on target-initial trials between the target-present and target-absent conditions may index the specificity of children's semantic representations of each target word. We hypothesized that, if children have specific definitions of each word, then they may shift away from the target image more quickly in the target-absent condition compared to the target-present condition.

Growth Curve Modeling

In order to capitalize on the temporal precision offered by eye tracking, a growth curve model was created to analyze data across the 300–1800 ms window. Figure 2 in the main article illustrates these time courses. The model contained linear, quadratic, and cubic orthogonal polynomials for time, as well as their interaction with talker type and semantic condition.

Table S1. Growth curve analysis, 300-1800 ms, LT and target-absent conditions as reference.

<i>Predictors</i>	<i>Log-Odds</i>	<i>SE</i>	<i>Wald Z</i>	<i>p</i>
(Intercept)	0.538	0.127	4.224	< .001
Target-Present Condition	0.307	0.154	1.992	.046
TT	0.061	0.174	0.350	.727
OT1	1.762	0.730	2.416	.016
OT2	0.608	0.415	1.464	.143
OT3	-0.732	0.278	-2.638	.008
Child Age	0.068	0.056	1.204	.229
Target-Present Condition × TT	0.214	0.206	1.040	.298
Target-Present Condition × OT1	1.785	0.849	2.102	.036
TT × OT1	0.752	0.959	0.784	.433
Target-Present Condition × OT2	-1.365	0.474	-2.879	.004
TT × OT2	-0.426	0.563	-0.757	.449
Target-Present Condition × OT3	-0.238	0.383	-0.621	.535
TT × OT3	0.095	0.373	0.255	.799
Target-Present Condition × TT × OT1	-0.837	1.073	-0.779	.436
Target-Present Condition × TT × OT2	-0.556	0.636	-0.873	.382
Target-Present Condition × TT × OT3	0.519	0.511	1.015	.310

Note. OT = orthogonal time; TT = typical talker.

A model converged with random intercepts and slopes for linear and quadratic time nested within participants, and random intercepts and slopes for linear, quadratic, and cubic time nested within a participant by condition interaction. Because orthogonal polynomials were used in these models, the intercept represents overall looks to the target throughout the analysis window. Results resembled those of the window analysis described above: LTs looked to the target significantly above chance in the target-absent condition (Wald $Z = 4.224$, $p < .001$). Across both LT and TT groups, children looked to the target significantly more in the target-present condition than in the target-

absent condition (Wald $Z = 1.992$, $p = .046$). There was no effect of talker type (Wald $Z = 0.350$, $p = .727$), talker type and linear time interaction (Wald $Z = 0.784$, $p = .433$), talker type and quadratic time interaction (Wald $Z = -0.767$, $p = .449$), or talker type and cubic time interaction (Wald $Z = 0.255$, $p = .799$), and there were no significant interactions between talker type and condition (Wald $Z = 1.040$, $p = .298$), talker type, condition, and linear time (Wald $Z = -0.779$, $p = .436$), talker type, condition, and quadratic time (Wald $Z = -0.873$, $p = .382$), or talker type, condition, and cubic time (Wald $Z = 1.015$, $p = .310$).

Reaction Time Analyses

Children who did not provide at least 2 trials in each condition were excluded from reaction time analyses. This resulted in 2 participants (2 LTs) being excluded from the distractor-initial analysis and 6 participants (2 TTs; 4 LTs) being excluded from the target-initial analysis. Reaction times were log-transformed prior to analyses.

Distractor-Initial Trials

Within this model, 24 TTs and 19 LTs were included. A multilevel model was run and p-values derived using the lmerTest package (Kuznetsova et al., 2017). Random effects of participant, participant by condition, and lexical item were included in the model, as well as child age. Results are presented in Table S2. Results revealed no differences between LTs and TTs ($t(67.259) = 0.273$, $p = .786$), no significant interaction between talker type and condition ($t(38.792) = -0.093$, $p = .102$), and no effect of semantic condition ($t(38.471) = 1.050$, $p = .300$).

Table S2. Reaction time analysis on distractor-initial trials.

<i>Predictors</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
(Intercept)	.547	.041	13.485	< .001
TT	.015	.054	0.273	.786
Target-present condition	.043	.041	1.050	.300
Child Age (Scaled)	-.033	.023	-1.442	.157
TT:Target-present condition	-.093	.056	-1.676	.102

Note. TT = typical talker.

Target-Initial Trials

Within this model, 22 TTs and 17 LTs were included. A multilevel model was fit using lmerTest, and included random effects of participant, participant by condition, and lexical item, as well as child age, presented in Table S3. Results revealed no effect of talker type ($t(46.678) = -1.682$, $p = .100$), condition ($t(34.460) = 1.762$, $p = .087$), and no interaction between talker type and condition ($t(31.206) = 0.311$, $p = .758$).

Table S3. Reaction time analysis on target-initial trials.

<i>Predictors</i>	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>
(Intercept)	.655	.053	12.267	< .001
TT	-.116	.069	-1.682	.100
Target-present condition	.113	.064	1.762	.087
Child Age (Scaled)	.012	.029	0.426	.673
TT:Target-present condition	.026	.084	0.311	.758

Note. TT = typical talker.